REMARKS

Applicants appreciate the Examiner's thorough review of the present application, and respectfully request reconsideration in light of the preceding amendments and the following remarks.

Claims 28-30 and 35-44 are pending in the application. The claims are unchanged notwithstanding the new grounds of rejection.

The new *35 U.S.C. 103(a)* rejection of all claims as being obvious over *Hideo* in view of *Michler* is noted. Applicants respectfully traverse the rejection for the following reasons.

Michler, which is cited for the first time in the outstanding Office Action, discloses a technique that focuses on damping the vibration occurred in a knife cylinder when cutting a continuous material web. The reference also relates to an active vibration control apparatus having a tuned mass that controls the vibration of the knife cylinder in order to effectively control the vibration caused by the engagement of the cutting blades. Specifically, the tuned mass and a spring arm are connected or coupled to the knife cylinder such that the natural resonance frequency or the natural frequency of the knife cylinder system becomes lower than that of a system without the tuned mass and the spring arm. *See Michler* at column 7, lines 35-59. Furthermore, based on signals from acceleration sensors attached to the knife cylinder and the tuned mass, an appropriate magnetic force or an adjusting force is applied to the tuned mass, thereby reducing the vibration. *See Michler* at column 9, lines 60-65, and column 10, lines 14-19.

As to **independent claim 28**, the Examiner alleges that *Michler* teaches, especially in Figs. 10-11, varying torque (by changing speed) during a cutting process for making proper cuts on a web, and that change in speed causes change in torque. Furthermore, the Examiner alleges that it would have been obvious to one skilled in the art at the time the invention was made to vary the

first torque component and the second torque component during a cutting process as taught by *Michler* for making proper cuts on the web. Applicants respectfully disagree.

At the very least, the technique taught in *Michler* is directed to monitoring accelerations of the knife cylinder and the tuned mass to control (i.e., dampen) the vibrations of the knife cylinder by tuning the mass, which would be recognized by a person of ordinary skill in the art as being completely different from the claimed invention that controls the cutting torque component.

More specifically, the vibrations being dampened in the system of *Michler* and the respective adjusting force applied by *Michler* to dampen such vibrations are lateral and have no impact on the cutting torque of the knife cylinder which is rotational.

The Examiner's attention is kindly directed to FIG. 8 of *Michler* which is a view in the direction of the rotational axis of the knife cylinder 12/14. *See Michler* at the arrows 8-8 in FIG. 7, as well as column 4 lines 52-53. The dampening force of *Michler* is applied (by way of electromagnets 108, 110 acting on permanent magnets 144, 146, 148 of the tuned masses 88) in the horizontal and vertical directions as denoted by the double-headed arrows 144, 138, respectively. *See Michler* at column 9 lines 9-14, column 9 line 60 through column 10 line 5. Thus, vibrations and the corresponding adjusting forces generated in the system of *Michler* are in a plan (paper plan of FIG. 8) perpendicular to the rotational axis of the knife cylinder 12/14. Such vibrations or adjusting forces laterally fluctuate the rotational axis of the knife cylinder 12/14, but do not effect rotational movement of the knife cylinder 12/14 about its rotational axis. Therefore, the *Michler* vibrations or adjusting forces do not change the cutting torque of the knife cylinder 12/14 which, as well understood in the art, is related to the rotational movement of the knife cylinder.

Accordingly, Applicants respectfully submit that *Michler* fails to teach or suggest controlling the cutting torque components as recited in independent claim 28.

It should be noted that embodiments of the claimed invention provide an advantage in that an accurate cutting operation at high cutting speed can be achieved. *Michler* if combinable with *Hideo* would provide at best vibration-free cutting at high speed which is not the same as the disclosed advantage of embodiments of the claimed invention.

Thus, the claimed invention is both structurally and functionally distinguishable from *Michler* and *Hideo*.

The *35 U.S.C. 103(a)* rejection of claim 28 is improper and should be withdrawn.

The dependent claims are considered patentable at least for the reason(s) advanced with respect to the respective independent claim(s).

As to **claims 29, 30, 42**, Applicants respectfully disagree with the Examiner's position that the claimed torque pattern would have been obvious as mere repeated experiments. The Examiner is kindly reminded that it is the Office's initial burden to provide a clear articulation of the reason(s) why the claimed invention would have been obvious.[1]

Even if assuming *arguendo* that a torque pattern could be obtained from experiments, the Examiner's rationale still lacks a clear articulation of the reason(s) why a person of ordinary skill in the art would have made such experiments ?

Given the apparent failure of the Examiner to specifically point whether/why a varying torque pattern would be desirable from the teachings of *Hideo* or *Michler*, Applicants respectfully submit that the claim feature would not have been obvious over the art as applied in the Final Office Action.

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[1] Rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR International Co. v. Teleflex Inc.*, 550 U.S. at ___, 82 USPQ2d at 1396.

The *35 U.S.C. 103(a)* rejection of claims 29, 30, 42 is improper and should be withdrawn.

As to **claim 35**, the Examiner is kindly requested to cite column and line numbers of *Michler* where the alleged teaching "the following knife and the preceding knife rotates with different speed" might be found. *See* the Final Office Action at page 4, the first full paragraph. Applicants have carefully reviewed the entire reference and yet failed to locate the alleged teaching. Clarification is respectfully requested.

The *35 U.S.C. 103(a)* rejection of claim 35 is improper and should be withdrawn.

As to **claim 37**, the Examiner's rationale is not understood. The Examiner appears to have self-contradictory positions with respect to the signs of torques with respect to claim 28 (Final Office Action at page 3, lines 4-5, i.e., contacting knives necessarily have torques of *different* signs) and claim 37 (Final Office Action at page 4, lines 6-8, i.e., contacting knives necessarily have torques of the *same* sign). Clarification is respectfully requested.

Further, as well understood in the art, the sign of a torque indicates the direction of rotation. For example, clockwise torques are generally assigned a negative sign, and counterclockwise torques are generally assigned a positive sign. The claim language requires the torques given to the two knives have the same sign when the web is not cut, meaning that, when the web is not cut, the torques are both clockwise or are both counterclockwise. The Examiner's rationale is completely off-point in this regard.

The *35 U.S.C. 103(a)* rejection of claim 37 is improper and should be withdrawn.

As to **claim 41**, the Examiner's analysis impermissibly disregards the claim feature that "the second torque component Txb given to the preceding knife by a preceding knife driving motor is varied in accordance with a torque pattern." *Hideo* and *Michler* singly or in combination do not

teach or suggest to vary the torque component in accordance with a torque patter as discussed *supra* with respect to claims 28 and 29.

The *35 U.S.C. 103(a)* rejection of claim 41 is improper and should be withdrawn.

As to **claims 43-44**, note the discussion *supra* with respect to claim 41 from which claims 33-44 depend.

The *35 U.S.C. 103(a)* rejection of claims 43-44 is improper and should be withdrawn.

Accordingly, Applicants respectfully submit that all claims are now in condition for allowance. Early and favorable indication of allowance is courteously solicited.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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